UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,553	11/29/2001	Martin E. Lee	PA0371-US	5147

7590 09/04/2003

STEVEN G. ROEDER
THE LAW OFFICE OF STEVEN G. ROEDER
5560 Chelsea Avenue
La Jolla, CA 92037

EXAMINER
KIM, PETER B

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 09/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/997,553	LEE ET AL.
	Examiner	Art Unit
	Peter B. Kim	2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-145 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-145 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 32002 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 12-19, 31-34, 66-73, 82-85, 106-109, 113-115, 120-122, 123-130, 137, 138, 140, 141 and 143-145 are rejected under 35 U.S.C. 102(b) as being anticipated by Horikawa et al. (Horikawa) (5,991,005).

Horikawa discloses in Fig. 8, a method of making a sage assembly and a stage assembly that holds a device (W) the stage assembly comprising a carrier (230), a device holder (240) that retains the device, a holder connector assembly (60, 52) that connects the holder bottom to the carrier top so that defomation of the carrier does not result in deformation of the device holder (col. 12, lines 42-64). The connector assembly includes three space apart flexures (60) wherein the connector kinematically connects the device holder to the carrier. The connector assembly includes three protrusions and three receivers (see Fig. 8). Horikawa also discloses a device table (220) wherein the carrier is coupled to the table and the stage mover moves the table (col. 11, lines 39-67) and the carrier is rotatable relative to the device table (col. 12, lines 50-55). Horikawa discloses an exposure apparatus including the stage assembly, a device manufactures

with the exposure apparatus and a wafer on which an image has been formed by the exposure apparatus (Fig. 1 and col. 1, lines 5-25). Horikawa also discloses a method for making an exposure apparatus that forma an image on an object comprising steps of providing an irradiation apparatus and the stage assembly discussed above (Fig. 1).

Regarding Claim 123, Horikawa discloses a stage assembly that holds a device (W), the stage assembly comprising a device table (230), a device holder (240), the device holder coupled to the device table (Fig. 8) and a holder damper assembly (60, 52) for damping vibration between the device holder and the device table (col. 12, lines 42-62).

Claims 1, 2, 4, 5, 12-14, 16-20, 27-36, 38, 45-51, 59-66, 68, 69, 71-74, 79-85, 106-109, 113, 114, 116, 118-127, 129, 130, and 137-145 are rejected under 35 U.S.C. 102(e) as being anticipated by Korenaga et al. (Korenaga) (6,570,645).

Korenaga discloses in Fig. 8, a method of making a sage assembly and a stage assembly that holds a device (wafer) the stage assembly comprising a carrier (563), a device holder (501) that retains the device, a holder connector assembly (580, 581) that connects the holder bottom to the carrier top so that defomation of the carrier does not result in deformation of the device holder (col. 24, lines 36-45). The connector assembly includes a flexures (581) wherein the connector kinematically connects the device holder to the carrier. Korenaga also discloses a device table (551, 562, 564) wherein the carrier is coupled to the table and the stage mover moves the table (Fig. 8) and the carrier is rotatable relative to the device table (col. 26, lines 55-65). Korenaga discloses a holder damper assembly including magnet generating flux that dampen vibration (580, 581, col. 23, line 36- col. 26, lines 65) for damping vibration between the

device holder and the device table (col. 12, lines 42-62). Korenaga discloses an exposure apparatus including the stage assembly, a device manufactures with the exposure apparatus and a wafer on which an image has been formed by the exposure apparatus (Fig. 13, 14, col. 1, lines 7-15). Korenaga also discloses a method for making an exposure apparatus that forma an image on an object comprising steps of providing an irradiation apparatus and the stage assembly discussed above (Fig. 13, 14).

Regarding Claim 123, Korenaga discloses a stage assembly that holds a device (wafer), the stage assembly comprising a device table (563), a device holder (501), the device holder coupled to the device table (Fig. 8) and a holder damper assembly including magnet generating flux to dampen vibration (580, 581, col. 23, line 36- col. 26, lines 65) for damping vibration between the device holder and the device table (col. 12, lines 42-62).

Claims 1, 7, 8, 32-34, 66, 83-88, 103-106, 110, 120-124, and 143-145 are rejected under 35 U.S.C. 102(a) as being anticipated by Lee (2001/0019250).

Lee discloses in Fig. 2 and 3, a method of making a sage assembly and a stage assembly that holds a device (24) the stage assembly comprising a carrier (32), a device holder (10) that retains the device, a holder connector assembly (36) made of three fluid assemblies that connects the holder bottom to the carrier top so that defomation of the carrier does not result in deformation of the device holder (para 0024, 0011). Lee discloses an exposure apparatus including the stage assembly, a device manufactures with the exposure apparatus and a wafer on which an image has been formed by the exposure apparatus (Para 0002-0006). Lee also discloses a method for making an exposure apparatus that forma an image on an object

comprising steps of providing an irradiation apparatus and the stage assembly discussed above (para 0002-0006).

Regarding Claim 123, Lee discloses a stage assembly that holds a device (24), the stage assembly comprising a device table (32), a device holder (10), the device holder coupled to the device table and a holder damper assembly (36) for damping vibration between the device holder and the device table (para 0024).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9-11, 89-91, 111 and 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Usui (2002/0126923).

Lee discloses the claimed invention as discussed above; however, Lee does not disclose fluid bearing in a triangular shaped cross-section and a pair of bearing pads. Usui discloses in Figure 1, bearing pads and fluid bearing in a triangular shaped cross-section. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the fluid bearing of Usui to the invention of Lee in order to provide accurate perpendicularity and unitary structure as taught by Usui in paragraphs 0007-0011.

Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korenaga in view of Lee.

Korenaga discloses the claimed invention as discussed above; however, Korenaga does not disclose the fluid bearings. Lee discloses in Fig. 2 and 3, a method of making a sage assembly and a stage assembly that holds a device (24) the stage assembly comprising a carrier (32), a device holder (10) that retains the device, a holder connector assembly (36) made of three fluid assemblies that connects the holder bottom to the carrier top so that defomation of the carrier does not result in deformation of the device holder (para 0024, 0011). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide fluid bearings of Lee to the invention of Korenaga in order to reduce deformation of the holder as taught by Lee in para 0005, 0006 and 0011.

Claims 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korenaga in view of Lee as applied to claim 41 above, and further in view of Usui.

The further difference between the modified Korenaga and the claimed invention is fluid bearing in a triangular shaped cross-section and a pair of bearing pads. Usui discloses in Figure 1, bearing pads and fluid bearing in a triangular shaped cross-section. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Korenaga by providing the fluid bearing of Usui in order to provide accurate perpendicularity and unitary structure as taught by Usui in paragraphs 0007-0011.

Claims 37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korenaga in view of Horikawa.

Korenaga discloses the claimed invention as discussed above; however, Korenaga does not disclose the three spaced apart flexures with protrusion and receivers. Horikawa discloses in Fig. 8, a method of making a sage assembly and a stage assembly that holds a device (W) the stage assembly comprising a carrier (230), a device holder (240) that retains the device, a holder connector assembly (60, 52) that connects the holder bottom to the carrier top so that defomation of the carrier does not result in deformation of the device holder (col. 12, lines 42-64). The connector assembly includes three space apart flexures (60) wherein the connector kinematically connects the device holder to the carrier. The connector assembly includes three protrusions and three receivers (see Fig. 8). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the three flexures of Horikawa to the invention of Korenaga in order to provide resilient members to constrain the position of the holder as taught by Horikawa in col. 12, lines 42-46.

Claims 92-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Horikawa.

Lee discloses the claimed invention as discussed above, however, Lee does not discloses carrier that rotates. Horikawa discloses in Fig. 8, a method of making a sage assembly and a stage assembly that holds a device (W) the stage assembly comprising a carrier (230), a device holder (240) that retains the device, a holder connector assembly (60, 52) that connects the holder bottom to the carrier top so that defomation of the carrier does not result in deformation of

the device holder (col. 12, lines 42-64). The connector assembly includes three space apart flexures (60) wherein the connector kinematically connects the device holder to the carrier. The connector assembly includes three protrusions and three receivers (see Fig. 8). Horikawa also discloses a device table (220) wherein the carrier is coupled to the table and the stage mover moves the table (col. 11, lines 39-67) and the carrier is rotatable relative to the device table (col. 12, lines 50-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the rotatable carrier of Horikawa to the invention of Lee in order to properly align the table as required for focusing or exposure as taught by Horikawa in col. 3, lines 39-53.

Claim 97 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Korenaga.

Lee discloses the claimed invention as discussed above, however, Lee does not discloses a damper that dampens vibration between the device holder and the carrier. Korenaga discloses in Fig. 8, a method of making a sage assembly and a stage assembly that holds a device (wafer) the stage assembly comprising a carrier (563), a device holder (501) that retains the device, a holder connector assembly (580, 581) that connects the holder bottom to the carrier top so that defomation of the carrier does not result in deformation of the device holder (col. 24, lines 36-45). The connector assembly includes a flexures (581) wherein the connector kinematically connects the device holder to the carrier. Korenaga also discloses a device table (551, 562, 564) wherein the carrier is coupled to the table and the stage mover moves the table (Fig. 8) and the carrier is rotatable relative to the device table (col. 26, lines 55-65). Korenaga discloses a holder

damper assembly including magnet generating flux that dampen vibration (580, 581, col. 23, line 36- col. 26, lines 65) for damping vibration between the device holder and the device table (col. 12, lines 42-62). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the damper of Korenaga to the invention of Lee in order to prevent the vibration of moving the carrier and table from reaching the device holder as taught by Korenaga in col. 22, lines 25-45.

Claims 21-26, 75-78, 116, 117, 119, and 131-136 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horikawa in view of Chen (6,420,475).

Horikawa discloses the claimed invention as discussed above; however, Horikawa does not disclose layers of damper. Chen discloses in col. 23, line 62-col. 24, line 7, a layer of damper of viscoelastic material to prevent vibration. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the damper of Chen to the invention of Horikawa in order to improve damping of vibration in mechanical equipment of Horikawa as taught by Chen in col. 23 – col. 24.

Claims 52-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korenaga in view of Chen (6,420,475).

Korenaga discloses the claimed invention as discussed above; however, Korenaga does not disclose layers of damper. Chen discloses in col. 23, line 62-col. 24, line 7, a layer of damper of viscoelastic material to prevent vibration. Therefore, it would have been obvious to

one of ordinary skill in the art at the time of invention to provide the damper of Chen to the invention of Korenaga in order to improve damping of vibration in mechanical equipment of Korenaga as taught by Chen in col. 23 – col. 24.

Claims 98-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Chen (6,420,475).

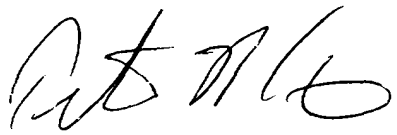
Lee discloses the claimed invention as discussed above; however, Lee does not disclose layers of damper. Chen discloses in col. 23, line 62-col. 24, line 7, a layer of damper of viscoelastic material to prevent vibration. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the damper of Chen to the invention of Lee in order to improve damping of vibration in mechanical equipment of Lee as taught by Chen in col. 23 – col. 24.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (703) 305-0105. The examiner can normally be reached on Monday-Thursday from 8:30 AM to 6:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703 308 2847. The fax phone numbers for the organization where this application or proceeding is assigned is 703 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 306- 3431.



Peter B. Kim
Patent Examiner
August 29, 2003